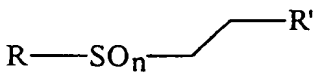
CLAIMS:

1. A method for characterising an analyte, which method comprises:

(a) providing a compound in which the analyte is attached by a cleavable linker to a reporter group relatable to the analyte, the compound having the following formula:



wherein either R comprises the reporter group and R' comprises the analyte, or R comprises the analyte and R' comprises the reporter group, and wherein n is 1 or 2;

(b) cleaving the reporter group from the analyte; and

(c) identifying the reporter group, thereby characterising the analyte.

2. A method according to claim 1, wherein R and/or R' comprise a covalent linkage attaching the analyte and/or reporter group to the cleavable linker.

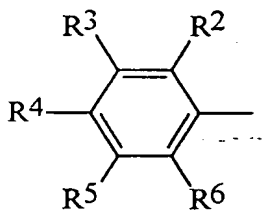
3. A method according to claim 2, wherein the covalent linkage is independently selected from a -CO-NH- group, an -NH-CO-NH- group, an -NH-CS-NH- group, a $-CH_2-NH-$ group, an $-SO_2-NH-$ group, an $-NH-CH_2-CH_2-$ group, or an -OP(=O)(O)O- group.

4. A method according to any preceding claim, wherein R comprises, between the SO_n group and the reporter group or analyte, a substituted or unsubstituted aromatic cyclic group, aliphatic cyclic group, or heterocyclic group.

5. A method according to claim 4, wherein R comprises, between the SO_n group and the reporter group or analyte, a substituted or unsubstituted group selected from phenyl, pyridyl,

pyranyl, naphthyl, anthracyl, pyrenyl, or fused ring derivatives or heteroaromatic analogues of the above.

6. A method according to claim 5, wherein the phenyl group is a group having the following formula:



wherein one of R^2-R^6 comprises the reporter group or analyte, and the remaining R^2-R^6 groups are independently selected from a hydrogen, and a substituent, such as a D, F, methyl, methoxy, hydroxy or amino group.

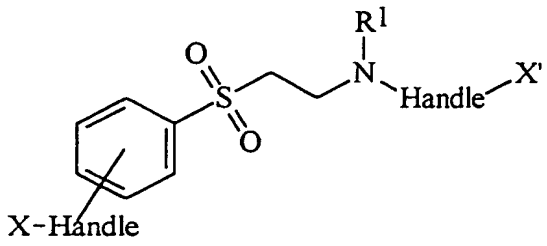
7. A method according to any preceding claim, wherein the R' group comprises a group selected from -S-, -SO-, -NR^1-, and -O- between the C atom that is in the β-position to the SO_n group, and the reporter group or analyte.

8. A method according to claim 7, wherein the R^1 group is an electron withdrawing group.

9. A method according to claim 8, wherein R^1 is a hydrogen atom, a halogen atom, or a substituent comprising a carbonyl group and/or a halogen atom.

10. A method according to claim 9, wherein R^1 is a fluorine atom, a chlorine atom, a bromine atom, an iodine atom, a trifluoroacetyl group, or a trifluoromethyl acetate group.

11. A method according to claim 1, wherein the compound has the following formula:



wherein R^1 is an electron withdrawing substituent, X comprises the reporter group and X' comprises the analyte, or X comprises the analyte and X' comprises the reporter group, and each Handle is the same or different, being either a single bond directly attaching the X groups to the phenyl ring and the N atom respectively, or a reactive group capable of attaching the X groups to the phenyl ring and the N atom respectively.

12. A method according to claim 12, wherein R^1 is selected from a hydrogen atom, a halogen atom, or a substituent comprising a carbonyl group and/or a halogen atom.

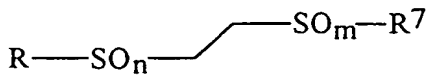
13. A method according to claim 12 or claim 13, wherein each Handle is independently selected from a -CO-NH- group, an -NH-CO-NH- group, an -NH-CS-NH- group, a $-CH_2$-NH- group, an $-SO_2$-NH- group, an -NH-CH_2-CH_2- group, or an -OP(=O)(O)O- group.

14. A method according to any preceding claim, wherein the analyte comprises a biological molecule.

15. A method according to claim 14, wherein the biological molecule is selected from a protein, a polypeptide, an amino acid, a nucleic acid, a nucleic acid base, a pharmaceutical agent or drug, a carbohydrate, a lipid, a natural product and a synthetic compound from an encoded chemical library.

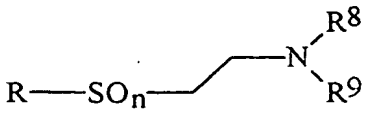
16. A compound according to claim 15, wherein the nucleotide, oligonucleotide or nucleic acid is natural, or is modified by modifying a base, sugar and/or backbone of the nucleotide, oligonucleotide or nucleic acid.

17. A method according to claim 15 or claim 16, wherein the analyte is an amino acid or a peptide comprising a cysteine group, and the compound is of the formula:



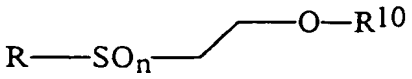
wherein m is 0 or 1 and the S atom attaching R^7 to the linker is the sulphur atom of the cysteine group, R^7 being the remainder of the amino acid or polypeptide.

18. A method according to claim 15 or claim 16, wherein the analyte is an amino acid or a peptide, and the compound is of the formula:



wherein the N atom is the nitrogen atom of an epsilon amino group of a lysine group, or is the nitrogen atom of an N-terminal alpha amino group, R^8 is selected from H, O or an N-protective group, R^9 being the remainder of the amino acid or polypeptide.

19. A method according to claim 15 or claim 16, wherein the analyte is an amino acid or a peptide comprising a serine, threonine and/or tyrosine group, and the compound is of the formula:



wherein the O atom is the oxygen atom from a hydroxyl group of the serine, threonine or tyrosine group, R^{10} being the remainder of the amino acid or polypeptide.

20. A method according to any preceding claim, wherein the reporter group comprises a mass marker detectable by mass spectrometry.

21. A method according to claim 20, wherein the mass marker comprises an oligoether or a polyether.

22. A method according to claim 21, wherein the oligoether or polyether is a substituted or unsubstituted oligo- or poly-arylether.

23. A method according to claim 21 or claim 22, wherein the oligoether or polyether comprises one or more fluorine atom or methyl group substituents, or one or more ^{2}H or ^{13}C isotopic substituents.

24. A method according to any of claims 20-23, wherein the mass marker comprises a metal ion-binding moiety.

25. A method according to claim 24, wherein the metal ion-binding moiety is a porphyrin, a crown ether, hexahistidine, or a multidentate ligand.

26. A method according to claim 25, wherein the metal ion-binding moiety is a bidentate ligand or is EDTA.

27. A method according to any of claims 24-26, wherein the metal ion-binding moiety is bound to a monovalent, divalent or trivalent metal ion.

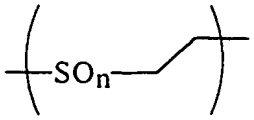
28. A method according to claim 27, wherein the metal ion is a transition metal ion, or a metal ion of group IA, IIA or IIIA of the periodic table.

29. A method according to claim 28, wherein the metal ion is Ni^{2+}, Li^{+}, Na^{+}, K^{+}, Mg^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, or Al^{3+}.

30. A method according to any preceding claim, which method further comprises heating the linker to cleave off the reporter group.

31. A method according to any preceding claim, wherein the reporter group is a mass marker and the method further comprises cleaving off the mass marker in the mass spectrometer.

32. Use of a linker group in the characterisation of an analyte, to attach a reporter group to the analyte, wherein the linker group is cleavable and has the following formula:

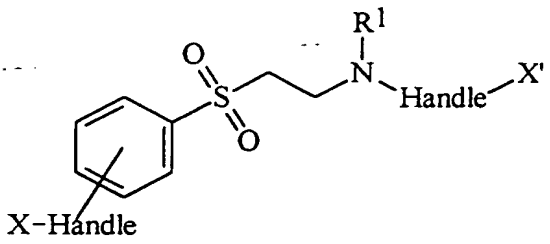


wherein n is 1 or 2.

33. Use according to claim 32, wherein the analyte is as defined in any of claims 14-19.

34. Use according to claim 32 or claim 33, wherein the reporter group is as defined in any of claims 20-29.

35. A compound having the following formula:



wherein R^1 is an electron withdrawing substituent, X comprises the reporter group and X' comprises the analyte, or X comprises the analyte and X' comprises the reporter group, and each Handle is the same or different, being either a single bond directly attaching the X groups to the phenyl ring and the N atom respectively, or a reactive group capable of attaching the X groups to the phenyl ring and the N atom respectively.

36. A compound according to claim 35, wherein R^1 is selected from a hydrogen atom, a halogen atom, or a substituent comprising a carbonyl group and/or a halogen atom.

37. A compound according to claim 35 or claim 36, wherein each Handle is independently selected from a -CO-NH- group, an -NH-CO-NH- group, an -NH-CS-NH- group, a $-CH_2$-NH- group, an $-SO_2$-NH- group, an -NH-CH_2-CH_2- group, or an -OP(=O)(O)O- group.

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38. A compound according to any of claims 35-37, wherein the analyte is as defined in any of claims 14-19.

39. A compound according to any of claims 35-38, wherein the reporter group is as defined in any of claims 20-29.